An Amendment to the Water Quality Control Plan for the Colorado River Basin Region
To
Establish
Palo Verde Bacterial Indicators Total Maximum Daily Load

AMENDMENT

(Proposed changes are in reference to the Basin Plan as amended through 2002. Proposed additions are denoted by underlined text, proposed deletions are denoted by ~~strikethrough~~ text)

Section V. TOTAL MAXIMUM DAILY LOADS add the following new subsequent Sections and renumber accordingly:

E. Palo Verde Bacterial Indicators Total Maximum Daily Load

1. TMDL ELEMENTS

Table E-1: Palo Verde Bacterial Indicators TMDL Elements

ELEMENT	
Problem Statement (Impaired water quality standard)	Excess delivery of bacteria to Palo Verde Outfall Drain (PVOD) in the Palo Verde Valley which lies in both Riverside and Imperial Counties of California, has resulted in degraded conditions that impairs designated beneficial uses: Water Contact Recreation (REC I), Water Non-Contact Recreation (REC II), Warm Freshwater Habitat (WARM), Wildlife Habitat (WILD), Preservation of Rare, Threatened, or Endangered Species (RARE). Bacteria pose a public health threat to people contacting water in PVOD and are in violation of water quality objectives.

ELEMENT	CURRENT CONDITIONS		
Numeric Target	The following are the in-stream numeric water quality targets for this TMDL:		
	Indicator Parameters	**30-day Geometric Mean[a]**	**Maximum**
	Fecal Coliforms	200 MPN[b]/100 ml	c
	E. Coli	126 MPN/100 ml	400 MPN/100 ml
	Enterococci	33 MPN/100 ml	100 MPN/100 ml

a. Based on a minimum of no less than 5 samples equally spaced over a 30-day period.
b. Most probable number.
c. No more than 10% of total samples during any 30-day period shall exceed 400 MPN/100 ml.

ELEMENT	CURRENT CONDITIONS
Source Analysis	The main sources of pathogens as indicated by fecal coliforms and E. coli bacteria in Palo Verde Agricultural Drain are natural background sources and dysfunctional septic systems. Natural sources of pathogens appear to play a significant role, but their actual contribution, and contributions from other nonpoint sources of pollution in general require proper characterization.

ELEMENT	CURRENT CONDITIONS
Allocations and Margin of Safety	Discharges from point sources and nonpoint sources of pollution shall not exceed the following waste load allocations (WLAs) and load allocations (LAs), respectively:

WLAs and LAs

Indicator Parameters	30-Day Geometric Mean[a]	Maximum
Fecal Coliforms	200 MPN[b]/100ml	[c]
E. coli	126 MPN/100 ml	400 MPN/100 ml
Enterococci	33 MPN/100 ml	100 MPN/100 ml

a. Based on a minimum of no less than 5 samples equally spaced over a 30-day period.

b. Most probable number.

c. No more than 10% of total samples during any 30-day period shall exceed 400 MPN/100 ml.

The allocations are applicable throughout the entire stretch of PVOD. The numeric target concentrations are based on extensive epidemiological studies conducted by USEPA and others. By setting the TMDL and each of the load and waste load allocations equal to the water quality objective, this approach results in limited uncertainty about whether attainment of the TMDL and the individual allocations will result in attainment of the applicable numeric target. The TMDL analysis takes a conservative approach of providing load and wasteload allocations even for relatively minor loading sources, which provide additional assurance that the selected source control approach will result in attainment of the numeric objectives. To address uncertainty concerning the bacterial die-off and regrowth dynamics in PVOD, the TMDL provides an implicit margin of safety by including a relatively aggressive monitoring and review plan which ensures that additional data are collected and that, if necessary, the TMDL will be revised.

<table>
<tr><td><u>Seasonal Variations and Critical Conditions</u></td><td><u>Loading to PVOD is the result of contributions from septic systems and wildlife, both relatively constant in nature. Critical loading conditions are likely to occur during low flow periods. Low flows in the Palo Verde Irrigation District coincide with winter months, January and February in particular, when less water is diverted into the system for irrigation.</u></td></tr>
<tr><td rowspan="4"><u>Load Allocations and Wasteload Allocations</u></td><td><u>The allocations are applicable throughout the entire stretch of Palo Verde Outfall Drain.</u></td></tr>
<tr><td><u>Load Allocations:</u>

<u>Based on the source assessment for PVOD, bacterial concentrations originate solely from nonpoint sources. There are no point sources contributing bacteria to PVOD. As this TMDL is density-based, the effluent from any future point sources and dischargers are required to meet the bacteriological water quality objectives. Additionally, in accordance with NPDES permits, dischargers will continue to be required to take necessary action to ensure consistent compliance with their NPDES permits. The existing WWTPs in Palo Verde Valley discharge to percolation basins, not PVOD and therefore do not have NPDES permits. It is assumed that any future WWTPs in the valley will discharge effluent in the same manner and therefore not be considered a point source discharge.</u></td></tr>
<tr><td><u>Natural Sources:</u>
<u>Wildlife is considered a natural background source. Given the abundance of wildlife concentrations in and above Palo Verde drains, it is expected that fecal contributions from wildlife comprise a significant proportion of bacteria loading in the entire system.</u></td></tr>
<tr><td><u>Waste Load Allocations:</u>
<u>There are no point source discharges to Palo Verde Outfall Drain or Lagoon, and therefore no WLAs. Any future discharge from point sources (NPDES permits) shall not exceed the total limits specified under 40 CFR 122 et seq., and the corresponding mass loading rates.</u></td></tr>
</table>

<u>TMDL attainment shall be in accordance with the schedule contained in the Numeric Target Section of Table E-1.</u>

2. IMPLEMENTATION ACTIONS AND REGULATIONS FOR ATTAINMENT OF PALO VERDE BACTERIAL INDICATORS TMDL

The bacteria load allocations, any future waste load allocations, and water quality objectives shall be applicable to Palo Verde Outfall Drain for the protection of the REC I and REC II beneficial uses and shall be achieved within 10 years of USEPA approval of the TMDL. To this end, the following actions shall be implemented:

2.1 Designated Management Actions

The bacterial load in PVOD is from nonpoint sources. California controls nonpoint source pollution as specified in the State's "*Plan For California's Nonpoint Source Pollution Control Program*," including "*Volume I: Nonpoint Source Program Strategy and Implementation Plan for 1998-2013 (PROSIP)*" and "*Volume II: California Management Measures for Polluted Runoff (CAMMPR)*". The cornerstone of the State NPS Management Plan is a "three-tiered approach," consisting of implementation of self-determined best management practices (Tier 1), regulatory-encouraged best management practices (Tier 2), and effluent requirements (Tier 3).

Following USEPA approval, the proposed implementation plan will be in two phases. Phase I consists of actions to be accomplished between 2004 and 2007. Phase I relies on controlling nonpoint sources of bacteria to Palo Verde Outfall Drain via voluntary best management practices and regulatory compliance with CWC §13291. Phase I also depends on any future point source contributors to comply with the requirements of their permits, Waste Discharge Requirements (WDRs), waivers and/or Memorandums of Understanding.

If water quality targets are not achieved upon conclusion of Phase I in 2007, Phase II actions will begin and the time schedule for implementation will be revised. The phased approach allows for immediate control of major sources while allowing time for monitoring to provide an analytical basis for Phase II planning. Phase II requires further assessment of bacterial contributions from sources not addressed in Phase I and determines the development of implementation actions to control these sources. Phase II will be completed by 2014. In Phase II, plans for a wastewater treatment plant in the community of Palo Verde may be introduced as the best method for managing bacteria in Palo Verde Outfall Drain.

2.1.1 Phase I Implementation Actions

Implementation Actions in this TMDL include both voluntary actions and those already required under existing or anticipated regulatory requirements. Voluntary actions will be taken by a variety of implementing parties, while the required actions are to be taken by identified responsible parties.

Phase I Voluntary Actions

PRACTICE	ACTION	SCHEDULE	IMPLEMENTING PARTIES
Septic system inspection and maintenance education	Inspection and approval of septic systems. Educate public on proper maintenance of septic systems	2004-Ongoing	County Health Departments
Reduce cropland and grazing land runoff	Implement self-determined management practices to reduce bacteria runoff	2004-Ongoing	Public and private land owners, County Farm Bureaus

Septic System Maintenance and Education:

Inform property owners that maintaining their septic systems is their personal responsibility and imperative to public health. Public outreach and education on this subject is the responsibility of Riverside and Imperial County Health Departments.

Phase I Regulatory Actions

PRACTICE	ACTION	SCHEDULE	IMPLEMENTING PARTIES
Septic system maintenance/ upgrade	Inspect and maintain all septic systems in watershed per AB 885	2004-Ongoing	Riverside County, Imperial County

Septic System Maintenance Plan:

The Regional and State Water Boards, with the cooperation of Riverside and Imperial Counties, will create a plan for the maintenance of septic based on CWC 13291. CWC 13291 requires the State Water Resources Control Board, on or before January 1, 2004 (in consultation with many entities), to adopt specified regulations or standards for the permitting and operation of prescribed onsite sewage treatment systems that meet certain requirements. Because of the way this code was written, the septic system maintenance issue will be addressed in phases. State Board will propose septic system guidelines on or before January 1, 2004. At that time, the Regional Board may incorporate State Board guidance into waiver policies.

2.1.2 Phase II Implementation Actions

If water quality targets are not achieved upon conclusion of Phase I on December 31, 2007, Phase II actions will begin and the time schedule for implementation will be revised. The phased approach allows for immediate control of major sources while allowing time for monitoring to provide an analytical basis for Phase II planning. Phase II requires further assessment of bacterial contributions from sources not addressed in Phase I and requires the development of implementation actions to control these sources. Phase II will be completed by December 31, 2014. If the pathogen problem persists, plans for a wastewater treatment plant in the community of Palo Verde may be introduced as a method for managing pathogens in Palo Verde Outfall Drain during Phase II.

2.1.3 Conditional Prohibition

A conditional prohibition of discharge of bacterial indicator organisms is hereby established for Palo Verde Outfall Drain and its tributaries in Palo Verde Valley. Specifically, beginning three months after OAL approval of the Palo Verde Bacterial Indicators TMDL, the direct or indirect discharge of bacterial indicator organisms to the Palo Verde Outfall Drain and its tributaries is prohibited, unless:

1. The Discharger is:
a. In compliance with applicable TMDL(s), including implementation provisions; or
b. Has a monitoring and surveillance program approved by the Executive Officer that demonstrates that discharges of bacterial indicator organisms into the aforementioned waters do not violate or contribute to a violation of the TMDL(s), the anti-degradation policy (State Board Resolution No. 68-16) or water quality objectives; or
c. Is Covered by Waste Discharge Requirements (WDRs) or a Waiver of WDRs that applies to the discharge.

Individual Dischargers must file a Report of Waste Discharge for general or individual Waste Discharge Requirements. Compliance with the conditional prohibition will be determined with respect to each individual Discharger. The intent of this conditional prohibition is to control, to the degree practicable, bacterial indicator organism discharges from irrigated lands, publicly owned treatment facilities, or privately owned treatment systems in amounts that violate or contribute to a violation of state water quality standards.

2.1.4 Time Schedule

Regional Board staff estimate a timeframe of 10 years to achieve control of pathogen loading in Palo Verde Outfall Drain. The limiting factor on this timeframe is upgrading septic systems in the community of Palo Verde or the subsequent installation of a waste water treatment plant. All other actions (public outreach and education, implementing best management practices) should be in place within ten years. Table 9.4 shows an implementation compliance schedule.

Compliance is achieved initially by demonstrating through reporting mechanisms that implementation measures have been undertaken, and by consequently meeting numeric targets as illustrated through water quality monitoring.

3. ESTIMATED COST OF IMPLEMENTATION AND SOURCES OF FINANCING FOR PALO VERDE OUTFALL DRAIN TMDL

There are no initial economic impacts as a result of implementing this TMDL. Depending on how successful Phase I is in reducing bacterial discharges, subsequent BMPs may have significant costs. Phase I has required and voluntary implementation actions that will be conducted and evaluated through the year 2007. If water quality goals are not achieved, Phase II will include another assessment of bacterial discharges and subsequent development of additional BMPs.

3.1 PHASE I REQUIRED IMPLEMENTATION ACTIONS

Inspecting and maintaining septic systems is required under this TMDL. Upgrading and maintaining existing septic systems is also mandated under AB 885. Since this is also a condition of a septic system permit, the cost of requiring it cannot be attributed AB 885 or the TMDL being considered.

3.2 PHASE I VOLUNTARY IMPLEMENTATION ACTIONS

Two practices were considered under this category, septic system maintenance public education and reduction of agriculture runoff.

- **Septic System Maintenance Public Education**

  Educating septic system owners on proper operation and maintenance is the responsibility of the county agency that issues septic system permits. Insuring that septic systems are operating according to the permit is also the responsibility of the issuing agency. The cost of these actions is normally included in the cost of the permit. Therefore, these costs should not be attributed to this TMDL.

- **Reduction of Agriculture Runoff**

  Nine agricultural runoff BMPs that control surface water runoff were considered for voluntary implementation. Four of the practices directly control pathogen runoff and the remaining five practices are more generally applied in situations to reduce silt or sediment loss from tilling and irrigation activities. Since these activities are voluntary, growers will not implement

them unless they expect to benefit either financially or as a public service. Therefore, the costs of implementing this section is not attributable to this TMDL.

3.3 PHASE II PALO VERDE WASTEWATER TREATMENT FACILITY

Phase II will be implemented if Phase I water quality goals are not achieved by the year 2007. It is difficult to assess the economic impacts of this section of the TMDL because it is conditional on what the water quality is four years from now. What additional BMPs or other measures will be implemented at that time will depend on the re-assessment of bacterial sources contributing to the problem. If needed, an economic analysis can be conducted at that time.

4. REGIONAL BOARD MONITORING FOR PALO VERDE BACTERIAL INDICATORS TMDL

Trend monitoring will document progress toward achieving the desired water quality conditions. It is important to track TMDL implementation, monitor water quality progress, and modify TMDLs and implementation plans as necessary to:

- Address uncertainty that may exist in aspects of TMDL development;
- Track actions of the TMDL Implementation Plan to ensure that implementation is being carried out; and
- Ensure that the TMDL remains effective, given changes that may occur in the watershed after TMDL development.

The Regional Board will implement two types of trend monitoring: (1) quarterly water quality monitoring, and (2) surveillance and implementation tracking. Both are discussed further in the section below.

4.1 MONITORING AND TRACKING

Palo Verde Pathogen TMDL Monitoring Program will monitor pathogen indicator organisms, pursuant to the Regional Board Quality Assurance Project Plan for Sampling Pathogen Indicators in the Palo Verde Outfall Drain (QAPP). Monitoring will characterize pathogen indicator organisms and track compliance with numeric targets. Monitoring Program objectives include:

- assessment of water quality standards attainment;
- verification of pollution source allocations;
- calibration or modification of selected models (if any);
- evaluation of point and nonpoint source control implementation and effectiveness;
- evaluation of in-stream water quality; and
- evaluation of temporal and spatial trends in water quality.

Quarterly grab samples from sampling stations will be collected and analyzed for the following parameters:

- Fecal coliform organisms
- *E. coli*
- Fecal streptococci
- Enterococci
- Physical parameters (i.e. temperature, pH, dissolved oxygen)

Additionally, WWTP discharges will continue to be monitored for fecal coliform and/or *E. coli* bacteria as part of their NPDES permits. Enterococci monitoring will be required when tests become commercially available in the Region.

Yearly assessments will be made to the Regional Board by Regional Board staff (staff) of the progress of the actions set forth in the TMDL Implementation Plan. Staff will coordinate with public and private entities in order to ensure likely success of the TMDL Implementation Plan in accordance with the Implementation Compliance Schedule milestones. Staff will present yearly reports to the Regional Board that discuss:

- Water quality improvements in terms of pathogen indicator organisms

- If milestones are being met according to the Implementation Compliance Schedule
- What changes, if any, need to be made to the Implementation Compliance Schedule and why

4.2 DATA MANAGEMENT

Staff will compile Implementation Action Assessments and QA/QC validated monitoring data into an organized spreadsheet. The spreadsheet will be updated quarterly in order to maintain a current public record. The public record will be posted on the Region's website and stored in a Palo Verde Pathogen Implementation Monitoring File. Regional Board staff will evaluate the data to determine when numeric targets are attained.

4.3 WATER QUALITY MONITORING AND ASSESSMENT PALO VERDE OUTFALL DRIAN

Monitoring activities are contingent upon adequate programmatic funding. Staff will conduct monitoring activities for Palo Verde Bacterial Indicators TMDL pursuant to a Regional Board Quality Assurance Project Plan for Palo Verde Outfall Drain *(*QAPP*)*. The QAPP shall be developed by Regional Board staff and be ready for implementation within 30 days following USEPA approval of this TMDL. The Regional Board's Executive Officer shall approve the *QAPP* and monitoring plan after determining that the *QAPP* and monitoring plan satisfy the objectives and requirements of this Section. The objectives of the monitoring program shall include collection of water quality data for:

- Assessment of water quality standards attainment,
- Verification of pollution source allocations,
- Calibration or modification of selected models (if any),
- Evaluation of point and nonpoint source control implementation and, effectiveness
- Evaluation of in-stream water quality,
- Evaluation of temporal and spatial trends in water quality, and
- Modification of the TMDL as necessary.

The monitoring program shall include a sufficient number of sampling locations and sampling points per location along Palo Verde Outfall Drain. Samples collected quarterly from the above-mentioned surface waters shall be collected and analyzed for the parameters listed above. Staff will track activities implemented by dischargers and responsible parties and surveillance conducted for Palo Verde Bacterial Indicators TMDL pursuant to an implementation tracking plan (ITP). The ITP will be developed within 180 days following USEPA approval of the TMDL. The Regional Board's Executive Officer shall approve the ITP after determining that the ITP satisfies the objectives and requirements of this Section. The objectives of Regional Board Surveillance and implementation tracking are:

- Assess/track/account for practices already in place;
- Measure the attainment of Milestones;
- Determine compliance with NPDES permits, WLAs, and LAs; and
- Report progress toward implementation of NPS water quality control, in accordance with the SWRCB NPS Program Plan (PROSIP).